

## Draft LWG Suggestions for Revisions to EPA's Technology Screening Approach

### In-situ Treatment Evaluation

- For FS purposes we suggest EPA explicitly recognize that in-situ treatment (e.g., placement of activated carbon on or into surface sediment) and EMNR score nearly identically with respect to the various technology screening criteria. This is due to similarities in placement techniques for the various materials and their potential for movement or erosion under the various physical conditions being considered.

### Criteria Technical Determination Refinements

- Erosive –
  - EPA defines erosive areas as areas where the grain size is insufficient to resist the shear stress associated with the 2-year flow event, which creates significant overlap with the depositional area determination.
  - While LWG recognizes that there are areas of the river that are somewhat dynamic involving deposition much of the time and some erosion during infrequent events, it is worth considering whether the erosion and depositional criteria can be refined to create fewer ambiguous situations.
  - We suggest that EPA use a less frequent flow event for the erosion shear stress determination such that less overlap of these two criteria is created. We suggest the flow event selected also consider the extent to which erosion of a significant portion of the surface sediment layer (30 cm assumption for this project) would actually occur for that event in any given area. If desired, the LWG can conduct an analysis and propose a specific flow event for this purpose.
- Depositional –
  - EPA defines depositional areas as >2.5 cm/year of deposition or a subsurface to surface core ratio of >2.
  - The draft FS uses sedimentation rate of >1 cm/yr and a core ratio of >1.5 for determination of depositional areas based on the analysis and rationale presented in Section 6.2.2.1.1. We continue to support these values as reasonable thresholds for a depositional determination for reasons stated in that Section of the Draft FS. At a minimum, a well-documented rationale in the revised FS will be needed to support/justify any more restrictive criteria than what was presented in the Draft FS.
- Shallow –
  - EPA defines shallow areas as less than 1 meter below Ordinary Low Water (OLW), which is 2 ft NAVD88. The mean high water mark for the river is 20 ft NAVD88 and the upper elevation of the Study Area sediments, as defined by EPA, is 13.3 ft NAVD88. Thus, new caps placed within EPA's defined shallow zone would stay submerged over the large majority of river flow conditions (i.e., and therefore not comprise or be defined as "new uplands"). Also, as discussed in

the April 24<sup>th</sup> meeting, capping within this zone does not present unique habitat or flooding issues as compared to other shoreline elevations.

- We suggest that EPA use a water level that is aligned with the Study Area upper sediment boundary of 13.3 ft NAVD88. Using EPA's definition of areas 1 meter below a defined water elevation, we would suggest a definition for shallow areas as that portion of the Study Area between 13.3 ft and 10 ft NAVD88.
- Slopes –
  - EPA defined steep slopes as greater than 15% incline.
  - Caps can be engineered for slopes up to 33 to 40%, and EMNR can be effectively placed on slopes of up to 20 to 25%, including existing examples within Portland Harbor. (We can provide additional references supporting these thresholds, if desired.) Consequently, we suggest that EPA use multiple slope thresholds for the slopes criterion as discussed more below in the scoring suggestions.
- Structures and Pilings –
  - EPA used the structures located on the draft FS GIS layer plus an analysis of piling fields to determine areas for this criterion.
  - In addition to these areas, we suggest that EPA use in the screening evaluation the structure conditions identified in the LWG GIS structures layer provided to EPA and CDM on April 29, 2014 via email. This includes:
    - Under Structures (SS) - Areas located beneath structures including a 5 foot offset from the structure face to minimize dredging impacts to structures. These areas would be evaluated consistent with EPA's current approach.
    - Limited Access near Structures (SL) and Upland Removal behind Structures (SU) – Areas where open water equipment is not accessible due to structures and areas where no water-based equipment can reach, but access from shore is feasible. These areas would be scored as discussed in the scoring suggestions below, and if removal in these areas is selected in the screening process, the additional costs of dredging in these areas should be included in alternative cost estimates.
    - No Access around or behind Structures (SN) - Areas where access by water-based equipment is restricted and upland structures, utilities, and/or topography restrict access from shore. These areas would be scored as discussed in the scoring suggestions below.
    - Light Structures (e.g., floating docks) – Areas where structures are relatively easily moved to allow dredging. These areas would be scored the same to areas structure limitations do not exist.
- Propwash Zone –
  - Review of EPA's scoring tables indicates a few areas designated as propwash areas that lay outside the navigation channel and future maintenance dredge areas. This is inconsistent with the LWG propwash map file that EPA indicated it was using. We suggest this inconsistency be resolved and that propwash areas be defined consistent with the LWG propwash map file.

## Scoring Methodology

- **Overall Scoring Approach** – We suggest that the ternary (1, 0, -1) nature of the scoring system devised should be independently evaluated for each technology, as opposed to a scoring system that is adjusted for relative comparisons between technologies. In other words, because a condition represented by a criterion is adverse to one technology, it does not ensure that condition is necessarily conducive to another technology, and the scoring should reflect these engineering attributes. For example, rock/cobble/hardpan makes dredging difficult (score -1), but it does not intrinsically assist in capping (should be scored as 0 rather than a 1). Based on this concept, we would suggest the scoring changes shown in Table 1. These scores would be assigned consistent with the criteria refinements already discussed.

Keep in mind that a score of 0 or -1 does not preclude the application/assignment of that technology for a given area or condition. For example, we examined the 10 most common combinations of Site conditions (scenarios) in EPA’s scoring data file and compared the outcomes using EPA versus LWG suggested scores. EPA’s scores result in selection of dredging for 7 of those 10 most common scenarios. LWG’s suggested scores in Table 1 result in dredging for 4 of those same 10 scenarios, even though dredging never receives a score of 1 under any individual criterion.

**Table 1. LWG Suggested Refinements to the EPA-Proposed Technology Scoring Process.**

Criteria	EPA Scores			LWG Suggested Scores		
	Dredge	Cap	EMNR	Dredge	Cap	EMNR
Erosive or Wind Wave Zone?*	1	0	-1	0	0	-1
Depositional?*	-1	1	1	-1	1	1
Shallow?*	1	-1	0	0	-1	0
Slopes?*	1	0	-1	0	-1	-1
Rock, Cobble, or Bedrock?	-1	1	1	-1	0	0
Structures Pilings?*	-1	1	1	-1	1	1
Prop Wash Zone?	1	0	-1	0	0	-1
Moderate/Heavy Debris?	-1	1	1	-1	0	1

\*The criterion is assumed to include the suggested refinements discussed in the “Criteria Technical Determination Refinements” section above.

The following bullet points describe the suggested scoring changes and how they fit with the already suggested criteria changes.

- **Erosive/Wind Wave** –

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- We suggest changing the dredging score of 1 (conductive) to 0 (neutral) because erosive/wave conditions are not intrinsically conducive to or assist in dredging. In many ways these conditions make dredging more difficult due to issues such as the presence of coarser material, increased sediment resuspension due to faster water currents, difficulty in maintaining silt curtains and other BMPs during dredging in faster water currents, and the common presence of rip rap or armoring debris in wind/wake wave areas of the shoreline.
- These scores would be assigned consistent with the refinement of the flow year frequency for the erosive area criterion noted previously.
- Shallow –
  - We suggest changing the dredging score from 1 to 0 for shallow areas because these areas are not intrinsically conducive or adverse to dredging as compared to deeper shoreline areas.
  - These scores would be assigned based on the 10 ft NAVD88 threshold rather than the 2 ft NAVD88 threshold.
- Slope –
  - We suggest changing the dredging score from 1 to 0, because steep slopes are not intrinsically conducive to dredging, nor are they particularly adverse to dredging.
  - We suggest that capping should not be scored 0 for all slopes. Instead, capping and EMNR are more conducive to flat slopes while steep slopes are more adverse to these technologies. We suggest the following scoring thresholds:
    - Caps would score 1 for slopes flatter than 33%, 0 for slopes between 33% and 40%, and -1 (adverse) for slopes greater than 40%.
    - EMNR would be scored 1 for slopes flatter than 20%, 0 for slopes from 20 to 25%, and -1 for slopes steeper than 25%.
- Rock, Cobble, Bedrock –
  - We suggest changing capping and EMNR scores from 1 to 0 for this criterion, because hard surface conditions do not intrinsically assist or improve in the ability to place capping or EMNR material.
- Structures and Pilings –
  - We agree that areas under structures (including a 5 ft offset) or in dense piling fields should be scored as proposed by EPA. We would expand a similar scoring approach to other areas around structures as follows:
    - Limited Access near Structures (SL) and Upland Removal behind Structures (SU) – Score 0 for dredging, 1 for capping, and 1 for EMNR.
    - No Access behind Structures (SN) – Score -1 for dredging, 1 for capping, and 1 for EMNR.
    - Light Structures (e.g., floating docks) – Score 0 for dredging, 0 for capping and 0 for EMNR (i.e., these areas are the same as open water areas where no other criteria apply).

- Propwash Zone –
  - We suggest dredging would be scored 0 instead of 1 in propwash areas, because the presence of propwash does not intrinsically assist or simplify the process of dredging in these areas.
- Moderate to Heavy Debris –
  - We suggest scoring capping 0 rather than 1 in moderate to heavy debris areas, because debris does not either help or greatly hinder cap placement (although somewhat greater cap thicknesses may be needed to cover heavily interwoven debris areas).